

The research project is organized by the EVICT RADON NATIONAL STUDY team of pan-Canadian cancer researchers at the BC Cancer Agency, the University of British Columbia, the University of Calgary, Queens University, the University of Waterloo, Dalhousie University, as well as the BC Generations Project, the Alberta Tomorrow Project, and the Atlantic PATH Project, which are all part of the CanPath coalition of longitudinal health studies.

For administrative purposes, the research ethics approval of this study was provided by the Health Research Ethics Board of Alberta – Cancer Committee.

STUDY TITLE:

Understanding Canadian Environmental Lung Toxicant Exposures, Biomarkers and Health Impacts through Transdisciplinary, Citizen Science Research

FUNDED BY PEER-REVIEWED RESEARCH and OUTREACH GRANTS FROM:

Health Canada
The Canadian Cancer Society
The Canadian Institutes of Health Research
The Government of Alberta
The Alberta Real Estate Foundation
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Study ID: HREBA.CC-24-0310

Contact Information: radon@ucalgary.ca

The project lead is Aaron Goodarzi, and he is joined by the following Senior Investigators from across Canada whose expertise is in (these disciplines): Maria Aristizabal (biology), Darren Brenner (epidemiology), Graham Dellaire (biology), Trevor Dummer (epidemiology), Doreen Ezeife (medicine), Amy Li (engineering), Geoff Maksym (engineering), Victor Martinez (biology), Cheryl Peters (epidemiology), Cathy Ryan (geoscience), Joshua Taron (building science), Alain Tremblay (medicine), Robin Urquhart (epidemiology), Alison Wallace (medicine), Michael Wieser (radiation physics), and Jennifer Vena (epidemiology).

THANK YOU FOR YOUR INTEREST in becoming a **RESEARCH PARTICIPANT** in the Evict Radon National Study. This is a research study that requires you to perform a radon test for 120 days, in a residence where you have the authority and/or permission to carry this out. To be considered eligible, the Research Participant must have lived in their residence for five or more years and (to the best of their knowledge) will continue to live in this same residential building for the 120-day radon test period.

For your convenience, the essential consent declarations (that you will need to agree with in the affirmative to participate) have been broken down into four simple sections that will follow this page. This is an online consent process, and no signatures are required.

You can download all consent information for your own records [HERE](#). Thank you for making our research processes better!

CONSENT Part 1 of 4:

WHY AM I BEING ASKED TO TAKE PART IN THIS RESEARCH STUDY, AND WHAT IS IT ABOUT?

1. You are either:
 - a. Interested in radon testing and participating in scientific studies.
 - b. Invited to participate through a lung cancer screening program, oncologist, physician or patient advocate referral.
 - c. You have previously participated in the Evict Radon National Study and have consented to be contacted for future radon related research opportunities.
 - d. A part of a Canadian Partnership for Tomorrow longitudinal study cohort.
2. The **PURPOSE** of this study is to measure radon exposure in Canada to determine how this source of lung cancer is shaped by buildings, geologies, behaviours, and to develop technology needed to assess radon exposure in people.
3. The **POINT OF THIS STUDY** is to use radon exposure information to develop solutions to Canada's worsening radon gas exposure problem and enable wider access to early lung cancer screening programs for people who need it.
4. To achieve these goals, the Evict Radon National Study involves **PARTICIPATORY** research, where Research Participants are asked to collect biological specimens such as clippings of their toenails, and/or provide additional information such as factors influencing their lung health and/or disability status.
5. Taking part in **THIS STUDY IS VOLUNTARY** and researchers are available to discuss this with you. You may leave the study at any time, without giving reason, and without penalty.

If you decide to participate in this study, you will need to respond "YES" to the statement below. If you want more information before responding, please read the full consent document [HERE](#) and/or contact radon@ucalgary.ca.

Consent Statement 1: "I understand that I have been asked to take part in a research study and why it is being done."

- Yes, I understand
- NO, I do not want to participate (this will end participation)

CONSENT Part 2 of 4:

HOW MANY PEOPLE WILL TAKE PART IN THIS STUDY?

Up to 11,500 eligible and willing persons may be invited to become **RESEARCH PARTICIPANTS**. Up to 10,000 Research Participants will be provided with a no-cost, C-NRPP certified radon test kit and asked to provide all toenail clippings over their 120-day radon testing period. Radon decay products will be measured in these toenail clippings to determine personalized lifetime radon exposure and analyse lung cancer risk. An additional 1,500 persons who are experiencing disability will also be recruited for a project exploring the relationship between disability and lung cancer risk from environmental exposures such as radon.

WHAT WILL HAPPEN DURING THIS STUDY?

People who are experiencing disability and/or who are interested in providing samples of their toenails over 120 days (4 months) during a radon test have the option to complete an online eligibility survey to determine if they meet the criteria to become a Research Participant in the Evict Radon National Study.

Regardless of eligibility, all persons are still able to access Citizen Scientist-based, radon testing via the [Evict Radon National Study website](#) where people in Canada can purchase at-cost, C-NRPP approved radon test kits.

There are two eligibility surveys that ask the minimal amount of information our team needs to determine whether a person is eligible to participate in either the toenail testing and/or the disability-focussed parts of our current research. These short surveys should take ~5 minutes and can be completed at your leisure. Once your responses are recorded:

1. Our team will then **verify your eligibility**, and, if eligible, **YOU MAY BE INVITED** to consent and become a Research Participant. We need to balance the people who are invited to participate in this work so that the final group is representative of the Canadian population as a whole. While enrollment is limited, eligible persons will be invited on a first come, first served basis. If you are invited and you accept, we will then mail you a study kit that contains everything you need as a research participant.
2. **Your commitment** is to perform a radon test in your primary household for a period of 120 days only. People who have consented to provide toenail clippings, will collect everything they generate over the same 120-day period as their radon test, and return these together with the radon test to our team for analysis. You will also be asked to complete three online surveys, lasting between 10-20 minutes each.
3. **You are committing to the radon test period being a minimum of 120 days and a maximum of 127 days.** You will also need to deploy the radon test on or after September 1st and before the end of February 1st of a given calendar year.
4. **Our commitment** is to ensure the quality control of the radon testing process provides you with the most reliable household radon test outcome possible, typically within 6-8 weeks of the radon test device being returned successfully to the laboratory. We will also provide you free-to-download copies of all annual research outcomes, in one annual email sent out at the end of each calendar year.

5. **For participants joining this work via referral from a CanPath longitudinal health study,** the outcomes of your radon test will be linked to your participant file within those studies, and your agreements with the CanPath study will apply.
6. **Participant data is always fully de-identified,** so that your name, contact information, address, personal responses, and specific radon test results are NEVER published, or searchable in any way whatsoever where you can be identified. Your privacy is our highest priority.

WHY ARE WE STUDYING RADON IN TOENAILS?

Our project focusses on determining whether lifetime exposure to radon can be measured using the radon decay products that accumulate in the human body over time after exposure to radon gas. Some of these decay products are removed slowly by our bodies in tissues such as our hair and nails, and we are figuring out if they are a helpful measure of long term radon exposure. Toenails are ideal for this study since they are not subject to as many chemicals (shampoo, household cleaning products, dyes, etc), grow slower than fingernails, are something almost everyone has, and are generally easy for most people to collect.

If you decide to participate in this study, you will need to respond “YES” to the statement below. If you want more information before responding, please read the full consent document [HERE](#) and/or contact radon@ucalgary.ca.

Consent Statement 2: “I understand what I am to do (If I decided to take part) and how the information collected will only be used for this study.”

- Yes, I understand
- NO, I do not want to participate (this will end participation)

CONSENT Part 3 of 4:

WHAT ARE MY RESPONSIBILITIES SHOULD I DECIDE TO PARTICIPATE IN THIS STUDY? If you choose to participate as a Research Participant in the Evict Radon National Study, you will be expected to perform the radon test in your primary household for 120 days, and complete two online surveys. Eligible persons selected to participate in the toenail study will be asked to complete a third online survey. Eligible persons selected to participate in the toenail study will be asked to collect all toenail clippings (from all toes) over a 120 period of their radon test, as well as an additional third online survey.

WHAT WILL HAPPEN IF I CHOOSE TO WITHDRAW FROM THE STUDY EARLY? You can choose to end your participation in this research study at any time prior to the submission of findings for peer-review (called early withdrawal), without having to provide a reason. These requests should be submitted via email to radon@ucalgary.ca.

WHAT ARE THE POTENTIAL BENEFITS OR RISKS OF PARTICIPATING IN THIS STUDY?

1. The **DIRECT BENEFIT** of being a Research Participant, is receiving a no cost, C-NRPP quality controlled long term radon test kit and the associated radon result.
2. The **POTENTIAL or INDIRECT BENEFITS** of participation include:
 - a. Increasing your personal knowledge of the origins and modifiers of the Canadian radon exposure problem.
 - b. Carrying out work that allows research teams to develop solutions to reduce and/or prevent radon exposures and reduce future lung cancer cases in Canada.
 - c. Enable research teams to develop new methods that can measure lifetime radon exposure, so that more people who need early screening for lung cancer can access these programs.
3. There are **NO KNOWN RISKS** of physical harm connected with participation in performing a radon test as part of this study. For those participating in toenail clipping collection, these risks are the same as you might normally encounter as part of personal grooming. Those participating in the disability study will be asked to recall and report on the nature of their disability and how it impacts how they split their time between different environments and should be aware of this.
4. The **POTENTIAL or INDIRECT RISKS** associated with participation include learning of a radon reading in the building tested that you or others may identify as a health concern. Please be aware that it is entirely your choice to act, or not, on the outcomes of a radon test. For radon levels at or over 200 Bq/m³, you are advised to reduce levels below this amount before selling your house to another person. If no action is taken, you are advised to disclose this outcome during a real estate transaction. For more information, we refer you to the most up to date facts via [Health Canada](#) and/or the [C-NRPP](#). Please note that there are financial costs associated with installation of radon mitigation systems. The Evict Radon National Study is NOT affiliated in anyway with radon mitigation, installation or consultation. If you are experiencing disability, you will be asked to report how this may or may not impact how you split your time between different buildings.

If you decide to participate in this study, you will need to respond “YES” to the statement below. If you want more information before responding, please read the full consent document [HERE](#) and/or contact radon@ucalgary.ca.

Consent Statement 3: “I understand the potential benefits and risks associated with this study and that I am free to leave this study at any time, without reason or penalty.”

- YES, I understand
- NO, I do not want to participate (this will end participation)

CONSENT Part 4 of 4:

IS THERE ANY CONFLICT OF INTEREST RELATED TO THIS STUDY?

No. There are no conflicts of interest relating to this study. The researchers and their families have no known personal connection to any for-profit group relating to this work. Funding from this study comes from public sector agencies.

HOW WILL MY PERSONAL INFORMATION BE KEPT PRIVATE? PLEASE BE ASSURED that all information entered will be kept 100% confidential and stored in secured, encrypted servers in Canada, subject to Canadian privacy laws.

WILL THERE BE COSTS TO PARTICIPATION / WILL I BE COMPENSATED FOR PARTICIPATION? Participation will NOT COST you anything.

If you are selected and agree to participate in the radon and disability research, you will get:

- 1 long term radon test kit
- 1 prepaid return envelope
- Printed instructions

If you are selected to participate and agree in the radon in toenail research, you will get:

- 1 long term radon test kit
- 1 toenail collection kit containing four labelled bags (one per 30-day period)
- 1 prepaid return envelope
- Printed instructions

WHAT IF MY RESIDENCE IS FOUND TO HAVE HIGH RADON THROUGH THIS STUDY? The purpose of this research is to evaluate radon levels in Canadian residential buildings, and so you will learn the level of radon (in Bq/m³, the unit that radon is measured in Canada) of your home. You are also able to learn this through many other radon testing options that are available to the public. If your residence is found to have levels of radon above Health Canada's administrative action guideline of 200 Bq/m³, it is still your personal choice whether to take action (such as the installation of a professional radon reduction) or not. The Evict Radon National Study does not provide radon mitigation estimations or services, and the research team (and their families) are NOT directly affiliated with anyone who offers these services. How you respond to this information is entirely within your personal choice. For independent information on radon mitigation, please see the [Canadian Nation Radon Proficiency Program](#) and/or [Health Canada](#).

WHAT IF SOMETHING IS DISCOVERED ABOUT ME DURING THIS STUDY? If you are participating in the toenail study, you will receive a report on the aggregated outcomes this part of the project once we have completed the analysis. The report will show the outcomes for the whole group in a de-identified manner, contextualized to household radon exposures across the population. As this is a research study whose experimental outcomes are not yet certain, we do not yet know if the measurement of radon decay products in toenails are going to be helpful for personalized risk evaluation, and so at this time we cannot guarantee that we will be able to share your individual toenail analysis outcome with you. We can say that, if this information is determined to be helpful to you in a manner that does no harm, we will make every effort to

share this with you by direct communication, and following the appropriate approvals sought from the research ethics oversight board who evaluate what we do.

WHAT ARE MY RIGHTS AS A PARTICIPANT IN THIS STUDY?

Your rights to privacy are legally protected by federal and provincial laws that require safeguards to ensure that your privacy is respected. By providing your consent to join this study, you do NOT give up any of your legal rights.

If you decide to participate in this study, you will need to respond “YES” to the statement below. If you want more information before responding, please read the full consent document [HERE](#) and/or contact radon@ucalgary.ca

Consent Statement 4: “I understand that I do NOT give up any of my legal rights by participating in this study.”

- YES, I understand
- NO, I do not want to participate (this will end participation)

OK – YOU'RE ALL SET!

To become a Research Participant, please enter your full name, email address and click the consent button below.

First Name	Last Name
Enter your contact email address here	Re-enter your contact email address here

CLICK TO CONSENT AND JOIN THIS STUDY

Here are some key things to know:

Who do I contact for questions related to this study? If you have questions about taking part in this study, you should first contact radon@ucalgary.ca for the most rapid response.

If you have any questions about your rights as a participant, or about ethical issues related to this study, and you would like to talk to someone who is not involved in the conduct of the study, please contact the Office of the Health Research Ethics Board of Alberta - Cancer Committee at:

- Telephone: 1 780 423 5727
- Toll Free: 1 877 423 5727

Upon consent, you will receive an automated, date-stamped email verifying your consent for your records.